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10/549,411

12/21/2005

Katsuaki Nakamura

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JORDAN AND HAMBURG LLP
122 EAST 42ND STREET
SUITE 4000
NEW YORK, NY 10168

EXAMINER

YANG, JIE

ART UNIT

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1733

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/549,411 | Applicant(s) NAKAMURA ET AL. | |
| | Examiner JIE YANG | Art Unit 1733 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 91-94 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 91-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/7/2010 has been entered.

Status of the Claims

Claims 1-90 have been cancelled; claims 91-94 are added as new claims; and claims 91-94 remain for examination. Claims 91 and 92 are independent claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

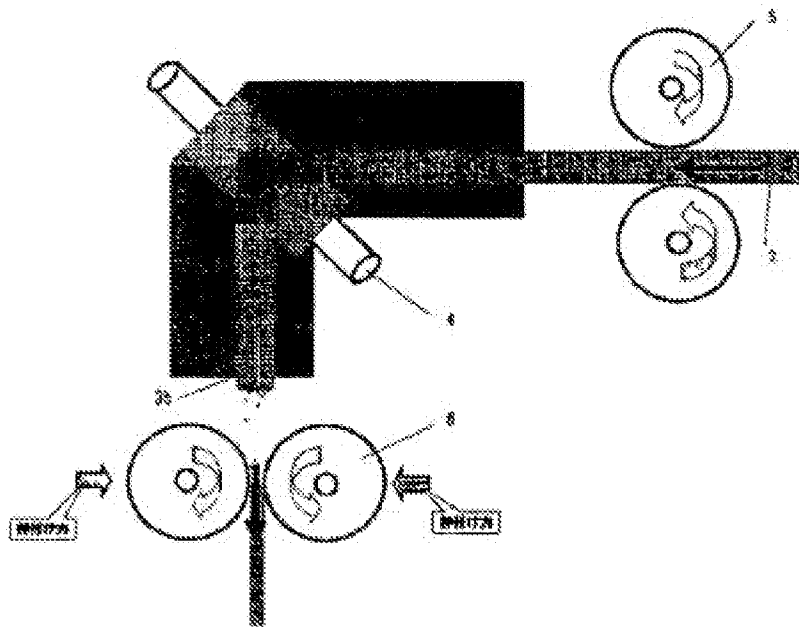
Claims 91-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (JP 2001-321825 with machine English translation, thereafter JP'825) in view

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of Ozawa (US 6,742,374 B2, thereafter, US'374) and Rosales et al (US 3,794,528, thereafter US'528).

Regarding the independent claims 91 and 92, JP'825 teaches guiding and rolling forging the metallic material before and after locally shearing operation (Fig.1-5, paragraphs [0028]-[0031] of JP'825) and JP'825 teaches the metal body moving along the extending direction (Refer to the Fig.4 of JP'825 as shown in following), which reads on the limitation of processing a metal body comprising the step of moving the metal body in an extending direction as recited in the instant claims.

[FIG. 4]



JP'825 teaches heating the metal material (Abstract and claims 1, 2, and 6 of JP'825), which reads on the heating step as recited in the instant claims. JP'825 does not specify heating by performing a solution heat treatment. US'374 teaches a method of partly reinforcing a workpiece (Abstract of US'374). US'374 teaches the reinforcement-requiring part of the workpiece that has been heated up to a high temperature upon contacting with the forming surface of the forming die makes it possible to partly reinforce the reinforcement-requiring part (Col.5, lines 11-30 of US'374). US'374 teaches heating to temperature not less than the A_1 transformation point to form austenite by continuous and batch types or high frequency induction heating (Col.4, lines 27-39 of US'374), which reads on the solution heat treatment as recited in the instant claims. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the solution heating treatment as demonstrated by US'374 in the process of JP'825 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374). JP'825 teaches a working method by which large strain is added and average grain size is micronized by applying large shear deformation to a metallic material and a part to which the shear deformation is applied is heated and cooled

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(Abstract, Fig.1-5 of JP'825), which reads on the limitations of turning the metal structure of the metal body into a finer grain structure by forming a low deformation resistance region with twisting and quenching as recited in the instant claims. Because JP'25 in view of US'374 teaches the similar solution heating treatment as recited in the instant claims, the property of increasing the amount of addition elements placed in the solid solution as recited in the instant claims would be highly expected in the material manufactured by the process of JP'825 in view of US'374. MPEP 2112.01. Although JP'825 teaches that the fine grain metal samples have been pull test under 400°C with remarkable ductility improvement (Paragraph [0027] of JP'825), JP'825 in view of US'374 does not teach intensely perform the aging operation as recited in the instant claims. However, it is a well-known technique for aging a metal material after cold-deformation as evidenced by US'528. US'528 teaches a thermo-mechanical method of forming high strength beta-titanium alloys (Title of US'528). US'528 teaches aging the metal material after cold working (Col 3, ln 51-66 of US'528) and this method can control the microstructure of the metastable beta-alloys to obtain fine homogeneous distribution of the alpha-phase in the beta-matrix (Col 7, ln13-17 of US'528). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

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invention was made to apply proper aging process as demonstrated by US'528 in the process of JP'825 in view of US'374 in order to obtain a fine microstructure material with the desired strength and ductility (claim 1 and Col 8, lines 14-15 of US'528).

Regarding the inter-heating step between the deformations as recited in the instant claim 92, JP'825 teaches deforming, heating, and deforming again as shown in fig.4 of JP'825. US'374 also teaches that: "In this case, the reinforcement requiring part of the workpiece can be heated up to a higher temperature than the other part by placing the reinforcement requiring part in the first heating atmosphere and the other part in the second heating atmosphere. The reinforcement requiring part of the workpiece can be heated up to a higher temperature than that applied to the other part also by resistance heating caused by electrical conduction between electrodes through the workpiece under the condition that at least two electrodes are attached to the workpiece. The electric current supplied to the electrodes may be direct or alternating. Exemplary alternating currents include high frequency currents. The frequency of the high frequency currents may be changed according to circumstances." (Col.4, lines 51-65 of US'374), which reads on the limitation of

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forming second low deformation region as recited in the instant claim.

Regarding the limitation of pre-heating steps as recited in the instant claims 93 and 94, US'374 teaches that: "In the heating step, heating means for forming a first heating atmosphere of a high temperature and a second heating atmosphere of a relatively lower temperature than that of the first heating atmosphere may be applied." (Col.4, lines 47-51 of US'374), which reads on the pre-heating steps as recited in the instant claims. US'374 teaches heating to temperature not less than the A_1 transformation point to form austenite by continuous and batch types or high frequency induction heating (Col.4, lines 27-39 of US'374), which reads on the solution heat treatment as recited in the instant claims. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply pre-heating at the temperature of the solution heating temperature as demonstrated by US'374 in the process of JP'825 in view of US'528 in order to obtain desired reinforcement on the reinforcement-requiring part of the workpiece (Abstract and Col.5, lines 11-30 of US'374).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 91-94 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-20 of copending application No. 12/002,951, now updated as US patent 7,559,211 B2 and evidenced by Rosales et al (US 3,794,528, thereafter US'528).

Regarding claims 91-94, Claims 1-20 of US patent 7,559,221 teach the low deformation resistance region is sandwiched between the first and second non-low deformation resistance region (claim 1); heating with first and second cooling mechanism (claims 1-3); and twisting motion and rotation (claim

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3). Clams 1-20 of US patent 7,559,221 does not specify aging steps as recited in the instant claims, however aging a well-known heat-treatment process for metallic materials as evidenced by US'528. Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-20 of US patent 7,559,221 teach the similar method of working a metal by locally heating to form the low deformation resistance region as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-20 of US patent 7,559,221.

Claims 91-94 are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims 1-35 of copending application No. 10/529,807, now updated as claims 1-4 of US patent 7,637,136 B2 and evidenced by Rosales et al (US 3,794,528, thereafter US'528).

Regarding claims 91-94, claims 1-4 of US patent 7,637,136 teach the low deformation resistance region is sandwiched between the first and second non-low deformation resistance region; shearing the low deformation region; twisting motion; heating; quickly cooling. Clams 1-4 of US patent 7,637,136 does not specify aging steps as recited in the instant claims, however aging a well-known heat-treatment process for metallic

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materials as evidenced by US'528. Although the conflicting claims are not identical, they are not patentable distinct from each other because the claims 1-4 of US patent 7,637,136 teach the similar method of working a metal by locally heating to form the low deformation resistance region as disclosed in the instant claims. Thus, no patentable distinction was found in the instant claims compared with claims 1-4 of US patent 7,637,136.

Response to Arguments

Applicant's arguments with respect to newly added claims 91-94 have been considered but are moot in view of the new ground of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jie Yang/
Patent Examiner, Art Unit 1733